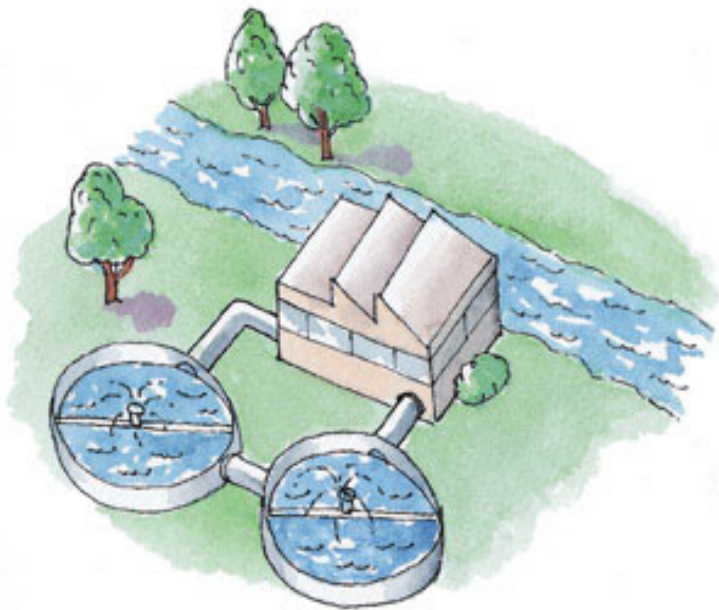


Preparing for a Sanitary Survey: *Information to Help Small Water Systems*

October 2003



DOH PUB. # 331-238



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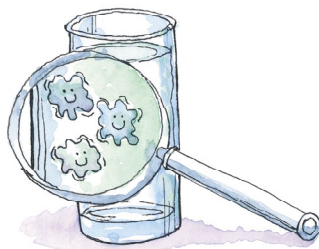
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Introduction

A safe and reliable drinking water supply is of fundamental importance to our health and well-being. Through proper operation and maintenance of your water system, you assure that safe and reliable drinking water is served to the public.



The purpose of this booklet is to help you prepare for a routine sanitary survey of your water system. While this guidance covers a broad range of topics, it is not an in-depth technical manual. It will, however, address the fundamental concepts of a routine sanitary survey and provide basic information to help you prepare for a survey.

The booklet includes the following:

- ◆ Sanitary survey inspection process;
- ◆ Minimum components of a routine sanitary survey;
- ◆ Self-inspection checklist;
- ◆ Common deficiencies surveyors hope NOT to find; and
- ◆ Information to help you operate and maintain your water system.

The components of a routine sanitary survey discussed in this guide mirrors the eight major elements required in a survey of a Group A water system – Chapter 246-290 of the Washington Administrative Code (WAC) and the federal Safe Drinking Water Act (SDWA). Each section summarizes the information that can be found in the regulations. Users of this booklet should consult these regulations and other Department of Health (DOH) publications for additional information.



Sanitary Survey Inspection Process

Regulatory requirement

As required under the federal Safe Drinking Water Act (SDWA), Washington State regulations (WAC 246-290-416) call for a routine sanitary survey of all Group A public drinking water systems once every five (5) years, except for community surface water systems, which are to be surveyed once every three (3) years.

What is a routine sanitary survey?

A routine sanitary survey is a periodic inspection of a water system's facilities, operations, and record keeping. The inspections identify conditions that may present a sanitary or public health risk.

Notification and inspection

How will I be notified?

You will receive notice from either DOH staff or your local health jurisdiction when a sanitary survey is required. The surveyor will then contact you to make arrangements for conducting the survey. They will work cooperatively with you to meet individual scheduling needs if possible. Water systems that do not schedule a survey will receive another notice with a required time frame for obtaining an inspection.



Who will conduct the survey?

Sanitary surveys are conducted either by DOH staff or by a DOH designee called a third party qualified sanitary surveyor (QSS). Some qualified sanitary surveyors are local health jurisdiction (LHJ) employees, while others are independent contractors.

Fees

Sanitary survey fees are collected either by DOH or your LHJ. If DOH collects the fee, you will get a bill with your final inspection report. If the LHJ collects the fee, it is payable either at the time you schedule a survey or when you get your final inspection report.



Next steps

What happens after the survey is completed?

After the survey is done, the surveyor will provide you with a completed survey checklist and a summary report with findings. Please read the report carefully, as it describes any observed deficiencies found during the inspection. It is your responsibility to correct these deficiencies promptly. A copy of the survey results will also go to the appropriate DOH regional office for review. DOH will notify you in writing if any immediate follow-up action is required.

Potential enforcement actions

What happens if I do not follow the requirements?

The primary reason for following the requirements is to insure that the water you serve people is safe to drink. Failing to meet your legal responsibilities to correct deficiencies promptly may result in increased monthly coliform monitoring to five samples per month, a red operating permit, state significant non-complier (SNC) status, and the possibility of civil penalties. Problems that could result include:

- The denial of other licenses or permits such as restaurant permits or liquor licenses.
- Lawsuits – Water users may file lawsuits against the owner.
- Red operating permits – This could result in the denial of loans by a lending institution for buying, refinancing, or remodeling of the facilities served by the system. This could also result in the denial of building permits.

Minimum Components of a Routine Sanitary Survey

Discussion and review of records

When the surveyor arrives to conduct the routine sanitary survey, the first thing they will do is go over the water system records with you. This includes

discussion and review of the

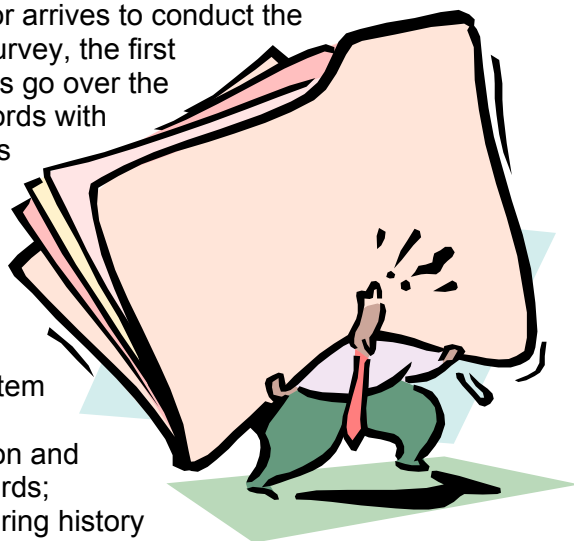
1) water facilities inventory (WFI) record;

2) distribution system plans and maps;

3) routine operation and maintenance records;

4) coliform monitoring history and plan;

5) source water quality monitoring history and waiver status; and 6) additional components. You can help prepare for the inspection by gathering, reviewing, and organizing these records to easily share them with the surveyor.



1. A review of the WFI record is done to make sure all the information listed for your water system is correct. This includes information on primary contacts, population served, number of connections, and storage capacity. The surveyor will note the changes directly on the form and return it to DOH to update the computer records. An accurate WFI is critical to properly classify a water system and to provide DOH with emergency contact information.
2. The surveyor will want to look at your distribution system plans and maps to see how often the maps are updated and if locations of the lines, valves, meters, tanks, sources, and treatment facility locations are

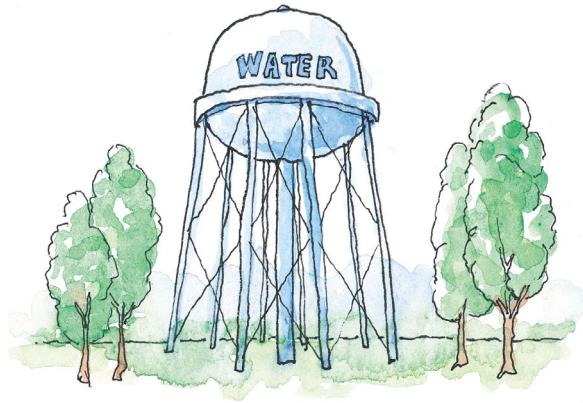
accurate. Good things to have on a map are the size of the main line, the type of pipe installed, depth of bury, and even when the pipe was installed.

3. A review of your routine operation and maintenance records for the necessary practices that will ensure your system is capable of supplying safe and reliable water. Tips on how to develop an operations and maintenance manual and recommended maintenance schedules can be found in Water System Operations chapter located in this booklet.
4. A review of your coliform monitoring history and plan and sampling procedures and latest results of any bacteriologic samples taken within the last two years.
5. A review of your source water quality monitoring history and waiver status sampling procedures and latest results of any samples taken within the last two years, including bacteriologic, lead/copper, inorganic, organic (VOC/SOC), radionuclide, trihalomethanes, and turbidity.
6. Depending on the complexity of the water system, the surveyor may ask about additional components, such as the status of other management, operation and maintenance documents, These could include:
 - Small water system management program (SWSMP);
 - Water supply security measures;
 - Cross connection control program and test histories of any backflow prevention assemblies; and
 - Operator certification status.

If you have not developed a SWSMP, water supply security measures, or cross connection control program, planning handbooks are available from DOH to assist you in developing your programs. Additional discussion about these programs can found in the Water System Operations chapter located in this booklet.

Inspection of water system

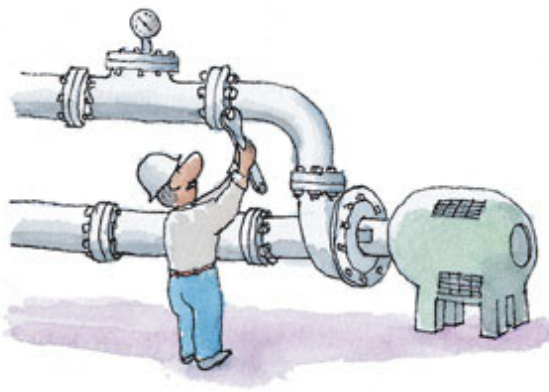
After the water system records have been discussed and reviewed, the surveyor will then take a tour of the water system itself. The tour will include an inspection of the 1) drinking water source and



sanitary control area; 2) treatment equipment; 3) pumps, pumping facilities and controls; 4) finished water storage; and 5) distribution system. Be sure to arrange for system personnel to be available on the survey date so they can show the surveyor around the system.

1. The surveyor will look at each drinking water source and sanitary control area, including emergency or seasonal sources, to see that they are properly secured and protected from possible sources of chemical or biological contamination. On the wellhead they will check for several items, such as: the well casing is 6-18 inches above the floor or pad; a sanitary seal (the seal between the wellhead and the pump); a source sampling tap; and an inverted screened vent. They will also look for any obvious holes into the wellhead for mice or bugs to crawl into and/or fall into the well and contaminate the water.
2. Next they will look at your treatment equipment, including chlorination. They will check that your equipment is working properly, check dosage rate calculations and go over required chlorination reporting, including the daily residual readings and how they are taken and recorded.

3. They will look at pumps, pumping facilities and controls to make sure they are in good working order and the facilities are clean.



4. Each finished water storage tank is looked at individually for structural soundness (interior and exterior damage and rust), access hatch lids are properly gasketed and secured, vents are adequately screened, the overflow and drain pipes are screened with a proper air gap, and area is properly secured. If these are not protected, birds, bats, insects, rainwater and dust can enter and contaminate the stored water.
5. Finally, they will tour the distribution system to better understand the system layout, the pressure zones, elevations, dead ends, and to check for potential high health hazard facilities that may need cross connection protection.



Safe inspections

What if the surveyor can't safely inspect your water system?

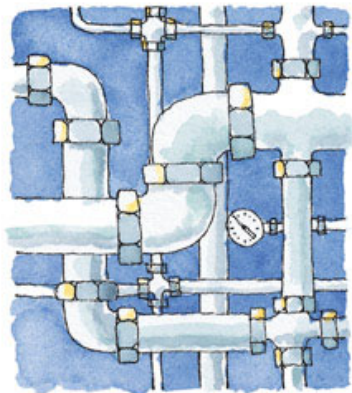
Situations arise in the field where the surveyor can't proceed with part or all of an inspection due to unsafe work conditions. They will let you know why they can't proceed and either point out what is needed before they can safely proceed or request that you get the information for them.

Unsafe to survey

If too many of the system's facilities are unavailable for inspection due to safety issues, the surveyor may decide that the system is not available to survey. In this case, the water system will receive written notice that it cannot be surveyed and will not receive credit for a survey. Sanctions may be imposed on systems refusing or not available for survey.

Things to remember to provide accessibility

- Have keys needed to open buildings, gates, well enclosures, hatches, etc.
- Special tools may be needed to open manholes or heavy lids.
- Clear brush or other vegetation around wells or buildings.
- Have available documentation of the last time elevated storage tank hatches, vents and overflow screens and gaskets were checked, so the surveyor can verify there are no unprotected openings.



Self-Inspection Checklist

The checklist below may help you track important events and tasks during the process.

Check when done	Task/Event	Date
<input type="checkbox"/>	System contacted and survey scheduled	
<input type="checkbox"/>	Arrangements made for system staff to be available on day of survey	
<input type="checkbox"/>	System records organized and available	
<input type="checkbox"/>	Final preparation for survey completed	
<input type="checkbox"/>	Survey conducted	
<input type="checkbox"/>	Survey follow-up letter received and filed	
<input type="checkbox"/>	Needed corrections scheduled for completion (if applicable)	
<input type="checkbox"/>	Any additional follow-up correspondence filed	



Common Deficiencies Surveyors Hope NOT to Find

Inspections reveal poor housekeeping

Sanitary surveys are a key component to protecting drinking water from contamination. Many deficiencies commonly found during a survey are often the result of poor housekeeping or maintenance. This possible route of contamination can be easily eliminated with simple improvements in housekeeping and maintenance practices. The following is a list of commonly found deficiencies surveyors hope not to find:

- Lack of a screened vent or other holes in the well casing.
- Lack of a screen or a damaged screen on storage tank vents.
- Storage tank overflows with out screens or flap valves.
- Old piping and tanks not eliminated (not just "valved off").
- Did not use proper flushing and disinfection techniques after construction or repairs.
- Poor choice of water sampling tap.
- Poor control of sanitary control area around drinking water source.
- Deficiencies noted on a previous survey have not been corrected.
- Lack of a watertight cap on a well developed as a pitless adapter.
- Lack of a source water meter.

On the next few pages are some photos of poor housekeeping habits or maintenance practices sanitary surveyors will be looking for when they visit your water system.



Opening in well casing and no screened vent



Well house used to store chemicals



**Poorly maintained storage tank
with ferns sprouting from top**



Unsealed -storage hatch cover



Unscreened reservoir overflow



Poor housekeeping of the well house



Unscreened storage tank vent



**Fill hose with no air gap,
creating a cross connection hazard**

Water System Operations

Reliability

What are my responsibilities for operating my system properly?

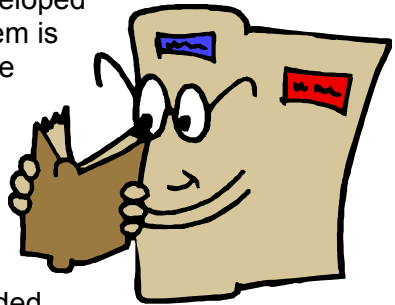
As the owner or manager of a public water system, your system must be able to reliably provide an adequate quantity and quality of water at all times. One way to be sure you can do this is by keeping and using an operations and maintenance (O & M) manual.

Operations and maintenance manual

What is the purpose of an O & M manual?

An O & M manual should be developed in order to ensure that your system is capable of supplying an adequate quantity and quality of water at all times. This manual should be set up so that all of the information necessary to operate and maintain your system is located in one place.

A three ring binder is recommended, since it allows updates of the manual easily.



What information should be included in the O & M manual?

There are several pieces of information that should be included in this manual. The manual should include sections on 1) system components; 2) a preventive maintenance schedule; 3) management or ownership; 4) financial arrangements; 5) water quality monitoring; and 6) emergency response plan and procedures.

1. The first section of the O & M Manual should be an inventory of system components. This inventory could include as-built drawings, distribution lines, pipe lengths, pipe diameters, materials, valves, blow-offs, pressure tanks and sizes, storage tank capacity, pumps, etc. Also include the age and condition of all of

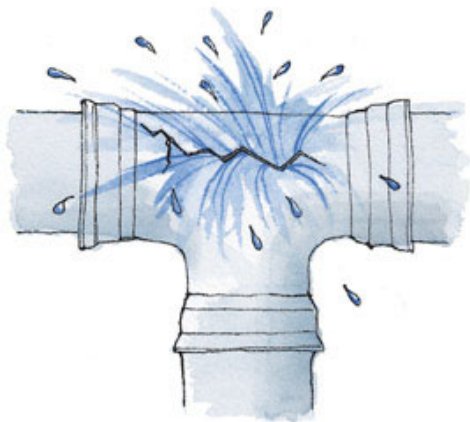
the system components and estimate their useful life and replacement dates. This is a good place to keep manufacturer's literature and warranties on your pumping equipment, pressure tanks, and other equipment. Keeping a copy of invoices in this section is also recommended.

2. Along with an inventory of system components, a predetermined preventive maintenance schedule should be included in the manual. The purpose of this section is to help ensure that inspections, repairs, cleanings and other maintenance are performed regularly.
3. Another critical element of the manual is a section on the management of the system. This section should describe who owns and/or operates your system. It is also advisable to list an emergency contact with a 24-hour phone number so that your customers, DOH, or the LHJ may contact you in an event that there are water service complaints, customer concerns, or an emergency.
4. This section should be about finances and your water system. Sufficient revenues should be available to meet or exceed the expenses it incurs. In order to monitor the revenues and expenses, you should develop and use an operating budget and that budget



should be included in the O & M manual. To assist in this, there is a financial viability workbook available from DOH. All systems operating in Washington must be financially sound.

5. There should be a section in the O & M manual for water quality monitoring. This section should include a schedule for all of the water quality testing (i.e., a copy of your annual water quality monitoring report) that is required for your system. If your water system requires monitoring for special treatment or disinfection, the monitoring schedule should also include information about this additional testing.



6. This section of the O & M manual should identify how you are prepared to handle emergency events such as the failure of the power supply, treatment process, equipment, or structure. An emergency response plan and procedures will assist you and your employees in resolving problems. If you are able to resolve problems quickly when they arise, you will have less business interruptions or closures due to water quantity or quality concerns. You may also describe how you will safeguard your system's components and protect against vandalism. If you have an approved satellite management agency (SMA) that owns or operates your system, their emergency contact number should be included in your O & M manual.

Operations and maintenance schedule

Is there a recommended O & M schedule to help keep my water system in good working condition?

Well house	
<i>Daily</i>	Check Overall Function
	Check Sound of Motors
	Check System Pressure
	Read Source Meter
	Check Hydropneumatic Tanks (charge with air as necessary)
<i>If Treatment:</i>	Treatment Equipment Inspection
	Treatment Chemical Monitoring as directed by DOH
<i>Weekly</i>	Measure Flow Rate (weekly preferred, no less than monthly)
	Check Pressure at Flow Rate
<i>Yearly</i>	Measure water level in the well

Storage tank	
<i>Daily</i>	Check Tank Level
	Conduct Site Inspection and Security Check
<i>Quarterly</i>	Inspect Reservoir Appurtenances (vent, hatch, overflow, etc.)
<i>Yearly</i>	Test low water level alarms
<i>Every 3-5 Years</i>	Reservoir Cleaning

Distribution system	
<i>As Needed</i>	Flushing
	Repair Leaks
<i>Monthly</i>	Flush Dead End Mains
	Read and Inspect Service Meters
	Test Run Emergency Generator
<i>Yearly</i>	Exercise Valves and Fire Hydrants
	Yearly Flushing
	Determine Percentage of Unaccounted for Water
	Perform Meter Maintenance

Seasonal water systems

If my system is a seasonal water system, what are the important steps recommended for opening and shutting down my system?

You should follow the following steps when conducting start-up and shut-down procedures to help ensure you can provide safe and reliable drinking water to your customers.

Start-up procedures:

- 1) A month before opening, thoroughly flush the drained system. By starting a month before opening, you will have time to correct any problems discovered before water is provided to your customers.
- 2) Disinfect the entire system following approved procedures from DOH.
- 3) Collect coliform samples for analysis, marking the lab slip "other" for type of sample and specify "investigative sample" on the form.
- 4) Make sure testing results are OK before water is provided to your customers.

Shut-down procedures:

- 1) Close valve controlling water source to the facility.
- 2) Open vents at the high points of the facility to be drained. These can be hose bibs, shower controls, lavatory faucets, etc.
- 3) Open the drain valves appropriate to the facility. There may be more than one.
- 4) Check to see that the entire system has drained completely.
- 5) Close drain valves and vent points. Do not leave the system valves and vents open while the system is shut down.

Cross connection control

What is a cross connection?

A cross connection is an actual or potential connection between the distribution piping of a public water system and customer plumbing or on-site piping which may contain liquid or gas.

Reversal of normal flow in the water system through a cross connection can allow

contaminants into drinking water either through back pressure or back siphonage. One example of a cross connection is a hose with one end attached to a water line and the other end lying in a sewer drain. Other potential cross connections can occur in automatic dishwashers, ice makers, commercial coffee urns, and post mix beverage dispensers using carbon dioxide (CO₂). These are all potential high health risk events. All water systems are required to develop a cross connection control program.



What is a cross connection control program?

A cross connection control program protects the health of the people drinking your water and the quality of the water in the system and is required of all public water systems. The complexity of a cross connection control program will vary depending on the size of your system and the potential risk. A good place to keep your cross connection program is with your O & M manual. Planning handbooks and list of approved cross connection control specialist is available from DOH to assist you in developing your program.

Record keeping and reporting

What records do I need to keep and for how long?

As the owner of a water system you should keep the following records of operation and water quality analyses. A good way to maintain these records is a second three ring binder.

Records need to be submitted if requested by either your LHJ or DOH regional office:

Type of Record	Length of Time
Copies of project reports, construction documents, drawings, inspection reports, and DOH correspondence (i.e., approval letter, operating permit, etc.)	Life of system
Chemical analysis	Life of system
Copies of any reports or communication relating to LHJ/DOH inspections performed	10 years
Daily source meter readings	10 years
Records of daily operation, including chlorine residual, fluoride levels, iron and manganese levels, water treatment plant performance as applicable (i.e., types of chemicals used and quantity, amount of water treated, etc.) and backflow prevention assembly testing	5 years
Bacteriological laboratory reports	5 years
Records of public notification for violations of primary drinking water standards	3 years



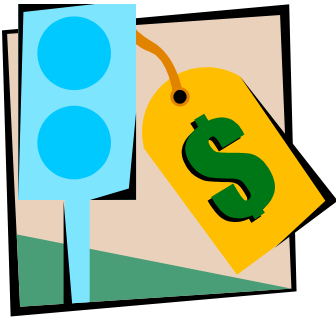
What do I need to report to DOH?

Unless you are instructed otherwise, the only information that should be reported to DOH on a routine basis is a water facilities inventory (WFI) form, water quality analysis, and treatment plant reports. The WFI form is a department form that summarizes the important characteristics of each public water system and provides the current names, addresses, and telephone numbers of the owners, operators and emergency contact persons for the system. On an annual basis check your WFI and inform your DOH regional office whenever any changes in name, phone number, connections, category, management, and/or ownership occur.

Continuity of service

What if I sell the water system?

System owners need to be sure to inform DOH before transferring the system to a new owner. It is preferable that a one-year notice be given if possible. The individual transferring ownership needs to ensure that the new owner has received adequate training regarding operation of the utility, as well as ensuring that water quality and service are not compromised during the transfer. Customers must be informed of any ownership transfer. Contact your DOH regional office for a “transfer of ownership” package.

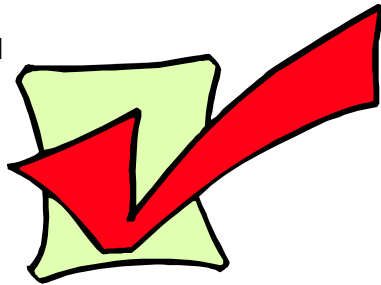


Water System Approval Process

System approval status

How do I know if my water system has ever received DOH or LHJ approval?

Your system is approved if you have a copy of the approval letter from either your DOH regional office or LHJ.



Approval process

What if my water system has never been approved?

Group A Systems

If you propose to construct a new Group A water system, a professional engineer (PE) licensed in the state of Washington must complete the required documentation and submit it to your DOH regional office for written approval. Contact your DOH regional office for guidance on the approval process for new Group A water systems and requirements for a PE.

If you have an existing Group A water system that has not received written approval from either your DOH regional office or LHJ, your system designer or PE must complete the required documentation and submit it to your DOH regional office for written approval. Contact your DOH regional office for guidance on the approval process for existing Group A water systems and requirements for a PE.

Group B Systems

If you propose to construct a new Group B water system, your system designer or PE must complete an approval package and submit it to your LHJ. Either your DOH regional office or LHJ will actually do the review and approval, depending on the agreement between DOH and the LHJ. The Group B approval package for new systems, and guidance on the requirement for a PE, are available from your LHJ.

If you have an existing Group B water system that has not received written approval from either your DOH regional office or LHJ, your system designer or PE must complete an approval package and submit it to your LHJ. Either your DOH regional office or LHJ will actually do the review and approval, depending on the agreement between DOH and the LHJ. The Group B approval package for existing systems, and guidance on the requirement for a PE, are available from your LHJ.

Satellite management agency requirement

If your Group A or Group B water system was created after July 23, 1995, the satellite management agency requirement applies. Under this requirement, all new water systems must be owned or comprehensively managed and operated by an approved satellite management agency (SMA) if one is available in your area. A satellite management agency is an individual, purveyor, or entity that is approved to own or operate more than one public water system on a regional or countywide basis. There does not need to be a physical connection between such systems. If an approved satellite management agency is available in your area, they must be contacted about the ownership and/or operation of the system as part of the system approval process.

Construction documentation

After I receive written approval to construct my water system, what must be done to get my new water system into operation?

Step 1. Upon approval, construct the water system according to approved construction documents.



Step 2. Have your system designer or PE inspect the system construction and certify that the construction is in compliance with the approved construction documents. Send as-built drawings to your DOH regional office. Your system designer or PE must confirm the completion of disinfection in accordance with department guidelines for a brand new system and provide evidence through a satisfactory bacteriological analysis.

Step 3. Send a construction report form, signed and dated by your system designer or PE, to your DOH regional office.



Definitions

Public water system

A public water system provides piped water for human consumption. Group B systems are small water systems primarily regulated by state law. Group A systems are larger systems regulated by both state law and the federal Safe Drinking Water Act (SDWA).

Human consumption

All drinking water should be suitable for human consumption. This applies to all water intended for human uses, including drinking, hand washing, food preparation, and cleaning of equipment used in the preparation of food or beverages. Process water that comes in contact with products intended for human consumption, and water included as part of a food product must meet certain drinking water standards but is regulated by the Washington State Department of Agriculture (WSDA) or the federal Food and Drug Administration (FDA).



Water system classification

Determining which rules to follow

In order to determine which requirements are applicable for your system, you need to know if you are a Group A or Group B public water system. Group A systems are further defined as community and noncommunity water systems. Noncommunity water systems are further defined as nontransient or transient water systems, often abbreviated NTNC or TNC water systems.

Group A Systems

You are a Group A nontransient non-community (NTNC) water system if:

- You provide access to water for 25 or more of the same nonresidential people for 180 or more days within a calendar year.

You are a Group A transient non-community (TNC) water system if:

- You provide access to water for 25 or more different people each day for 60 or more days within a calendar year and do not primarily serve a residential community; or
- You provide access to water for 25 or more of the same people each day for 60 or more days, but less than 180 days within a calendar year; or
- You provide access to water for 1,000 or more people for two or more consecutive days within a calendar year.

Group B Systems

You are a Group B water system with a transient population if you provide access to water for less than 25 people per day for at least 60 days per year or for more than 25 people per day for 59 days or less per year and do not primarily serve a residential community.

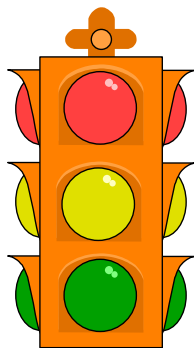
Operating permit program

What does the operating permit program mean for my water system?

If you operate a Group A water system, then you receive an annual DOH operating permit. Group B water systems do not receive an operating permit from DOH. The permit color indicates the adequacy status of your system:

Green = adequate
Yellow = conditional
Red = inadequate
Blue = undetermined

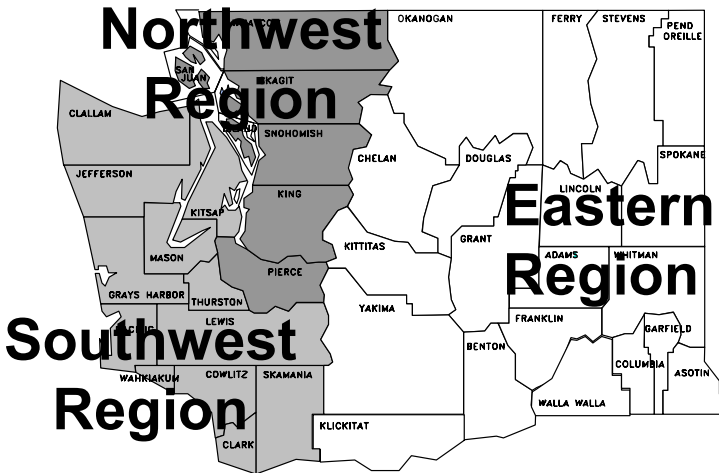
If you can't locate a copy of your operating permit, contact your DOH regional office compliance person for assistance.



DOH Regional Contacts

Who should I contact if I have questions?

The DOH regional offices are available to answer any questions regarding engineering design and approval and water quality monitoring requirements for water systems. Please contact the DOH regional office that serves your county:



Northwest Regional Office – Kent 253-395-6750

Southwest Regional Office – Olympia 360-664-0768

Eastern Regional Office – Spokane 509-456-3115

For additional resources and links to other useful information, please visit our web site at: <http://www.doh.wa.gov/ehp/dw/>

Please note that your LHJ may carry out some activities for DOH. As a result, information may be more readily available from your LHJ. In addition, your LHJ is an excellent source of information regarding permits and licenses, land use planning, and water quality testing. Their phone number can usually be found in the “county government” section of your local telephone directory.